

TCP Posting 000-122 Roadside Design Manual – 2023 Update

Comments received by TCP			
Comment ID	Organization	Comment	Response
275.01		<p>Section 4.2.2.2 - ACP</p> <p>The current RDM reads "Transition to a MASH end treatment requires the use of the 2858mm transition rail detail used to transition MGS guiderail to NCHRP Report 350 guiderail. Sentry SBGR may also be transitioned to MGS guiderail in the same manner."</p> <p>It may be more appropriate for this to read that it can transition directly or by use of 2.858m transition rail detail as the transition would not be necessary to systems with posts off splice such as the MSKT or Softstop.</p>	<p>Wording updated to reflect that the use of the 2858 mm rail is only needed to transition to legacy SBGR systems for ACP Sentry and Ezy-Guard 4.</p>
275.02		<p>Section 4.4.2.7 Hercules</p> <p>Can it be added in the system description that transition panels to MTCB are not required for Uni-directional installations, as supported by the manufacturer, as this would help in clarifying the expectations as</p>	<p>Wording in this RDM section is consistent with other crash cushions with respect to transitions.</p> <p>The MTODs will be revised to clarify that transition panels are only needed for reverse direction (leaving end) applications.</p>

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		the current MTOD for the Hercules is not specific on this issue.	
275.03		<p>Section 5.2</p> <p>Table 5-1 seems to be missing Hercules and Delta Crash Cushions. As these were added to the current SP 107S06 (April 2022), can these systems be added to the RDM table in the same manner?</p> <p>Thank you and we appreciate this opportunity to provide comments for your consideration. We were excited to see the addition of 4.2.4 Thrie Beam Systems.</p>	Table updated.
276.01		<p>Firstly,</p> <p>I would like to say that this update to the MTO Roadside Design Manual is the most in depth and up to date version that I have seen. I work with road authorities across Canada and various DOT's in the US and I am really looking forward to sharing this manual with them and showing how forward thinking we are in Ontario with</p>	Thank you for the comment.

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		<p>reference to road safety design, products selection, and inspection.</p> <p>I have a few questions and minor edits to submit. I have included a pdf file that contains my questions/comments. I have also added an updated image for the Pedestrian Access Terminal.</p> <p>If you have any comments or feedback regarding my questions I look forward to fielding them personally.</p> <p>Thanks for being so diligent with this manual, it really is a great baseline for other road authorities to use to get themselves caught up in the road safety infrastructure sector.</p>	
276.02		<p>Water Filled Energy Attenuators (Reduced Exposure): Was the intention of the Short Term, Gating, Non-Redirective Water Filled Energy Attenuator Specification to have the systems deployed in Ontario throughout the winter months where temperatures have been known to</p>	<p>Added wording recommending water filled crash cushions be used for less than 3 months duration in addition to the limitations listed. Also strengthened wording discouraging their use when near or below-freezing temperatures are expected.</p>

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		drop below -35 degrees Celsius? Furthermore, should limitations be clearer (or perhaps reduced) regarding the definition of short-term deployment of these systems?	
276.03		Chapter 2, Page 25 – Freeway Median Configuration Table. Will the MTO provide further guidance for the use of TL-4 Crash Tested Longitudinal Barrier Systems and add these details to the reference chart to identify their use classification.	Added guidance on the use of TL-4 barrier on freeway medians in section 2.3.6.
276.04		Chapter 2, Page 41 – Guide Rail Evaluation Reports as per Chapter 3, Page 30 includes terminals, treatments, and transitions. The threshold of repair guidelines for longitudinal steel beam guide rail and proprietary end terminals are different based on NCHRP Report 656. Can a notation be made in the Guide Rail Evaluation Report that Proprietary End Terminals shall be inspected per the manufacturers repair guidelines? Furthermore, where Major Capital Construction scope includes permanent Crash Cushions within the	As stated in Chapter 1, the purpose of the RDM is to provide cost beneficial policies, standards and guidelines for the design of the roadside environment adjacent to the roadway within provincial ROW. The RDM does not address maintenance work.  Wording added to differentiate evaluations of guiderail and end terminals.

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		limits of the contract, are the permanent Crash Cushions included in this Guide Rail Evaluation? (Second Chart – High Speed)	
276.05		Chapter 3, Page 32 – Steel Beam Guide Rail Criteria (Section 2 – System Condition). Note a) and Note c) refer to the condition of wood posts (broken / plumbness). As wood post guide rail has been removed from the Guide Rail Evaluation can these two references be removed from the inspection criteria?	Guidance updated. Evaluation of wood post SBGR is to be carried out in accordance with procedures in Chapter 3 of the RDM.
276.06		Chapter 5, Page 13 – Chapter 5, page 13 currently reads: ‘Restrained Type X barrier is a very high performing system, with a MASH TL-3 dynamic deflection of 150 mm.’ The section should read: ‘Restrained Type X barrier is a Category IV system, with a MASH TL-3 dynamic deflection of 50 mm.’ The changes are shown in FHWA Letter B-365 where in test 3-11 the Dynamic Deflection was documented as 50mm.	Deflection values corrected.

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276.07		<p>Chapter 5, Page 13 –                      In Chapter 5, Page 13 there is a reference to Type X Barrier ‘Anchors are placed on only one side of the barrier which makes this variation unsuitable for separation of opposing traffic flows.’. The Type X Restrained Barrier has a limited deflection (50mm). The deflection of the Type X Barrier in a freestanding application will satisfy the requirements of an MTO Category IV Barrier. Would the MTO consider installing ReDD anchors on both sides of the barrier for median applications as they did with the Type M Barrier Pinned on various projects? We could follow the same criteria that was used to make the adjustment to Type M Barrier Pinned (median)?</p>	<p>The ministry has a process in place for acceptance of crashworthy roadside safety hardware, described in Memo DCSO 2019-06. Utilizing the barrier with the proposed modification may be considered should updated crash testing or professional opinion demonstrate such a modification is crashworthy.</p>
276.08		<p>Chapter 4, Page 22/23                      With Reference to the Pedestrian Access Terminal. The draft RDM currently reads: ‘This detail has been crash tested to MASH Test Level 2’. Can you please adjust that phrase to read ‘This detail has been crash tested on a low-speed application,</p>	<p>Wording clarified.</p>

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		further details related to the testing and use of this product can be acquired through the distributor.' Can you also make a note that the image was courtesy of the Distributor: Northern Infrastructure Products (www.northern-ip.com). Finally, we have also attached an updated photo of the Pedestrian Access Terminal that could be used in lieu of the redacted images currently found in Figure 4-10.	
277.01		The Roadside design manual looks great and has some educational information. Please see attached below for questions regarding the updates to the Roadside Design manual that arose after we reviewed it.	Thank you.
277.02		Safe Systems Approach: Does the MTO plan to add any language with reference to the Safe Systems Approach to the Roadside Design Manual and how it relates to the design of our critical infrastructure?	Safe system wording added to section 1.5.

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277.03		<p>Training: As our road network evolves so does our safety infrastructure. Crash Cushions, End Terminals, Guide Rail, and High Tension Cable Guide Rail Systems are now crash tested to MASH standards. The province has elevated the safety devices used on our road network, but with the evolution of product we must be mindful of the importance of training designers, inspectors, and installers to ensure this critical safety infrastructure will perform as intended. Does the MTO plan to add a section in the updated RDM that will reference the training requirements in the province to install, maintain, and inspect these systems?</p>	<p>As there is not currently a formal training regime for installation of roadside safety hardware, there is no mention of any in the RDM as it would be highly speculative. The ministry is eager to work with industry to develop a formal training and certification program.</p> <p>Qualification requirements for proprietary systems are addressed in the construction specifications as appropriate.</p>
277.04		<p>Chapter 3, Page 12 – Throughout the draft updates of the MTO Roadside Design Manual there are various references to Type M SBGR. As the MTO has created SP 721S09 we now have non-proprietary and proprietary guide rail systems in our performance-based matrix. Would the MTO consider the use of the</p>	<p>Wording adjusted in the RDM for consistency. “MASH SBGR” including generic and proprietary systems is referred to as such. “Type M SBGR” used only when referring to the Midwest Guardrail System specifically.</p>



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		language 'MASH SBGR' instead of 'Type M SBGR' – also update reference to 'SBGR LP' (Which would only include Type M systems). MASH SBGR would be more inclusive and could be further defined as Steel Beam Guide Rail Systems that are found within the Contract Preparation System.	
277.05		Chapter 3, Page 31 – Chapter 3, Page 31, Note a) currently reads that rail splices in Type M SBGR are at every other post and in SBGR the splices are located between posts. MASH SBGR (including Type M) splices are located between the post, while SBGR (Pre-MASH) the splices were located every other post. The language has been reversed with reference to the splicing pattern of steel beam guide rail.	Note a) revised to convey that Type M has rail splices located mid-span between posts while legacy SBGR has rail splices located at posts every second post.

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277.06		Chapter 4, Page 38 – Chapter 4, page 38 currently reads: ‘The MASH TL-3 working width of the ACP TL-4 barrier is 1.36 m. The MASH TL-4 working width is 2.46 m.’. The section should read: ‘The MASH TL-3 working width of the Ingal Civil Ezy Guard High Containment barrier is 1.16 m. The MASH TL-4 working width is 2.46 m.’	Wording corrected.
277.07		General Inquiry – Since the RDM’s original release in 2017 and the subsequent update in 2020 Trinity Highway Products was purchased and renamed Valtir LLC. Can all references to Trinity Highway Products and Energy Absorption be updated to correct that change? (See page 16, 65, 70 and 71). Can you also add the Valtir LLC Median Attenuating Trend Terminal (MATT) to the SBEAT Median List found on page 4-61 (Section 4.4.1).	References updated.

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277.08		<p>Chapter 4, Page 24 (Figure 4-11)            Figure 4-11 Depicts a Long Span Structure Connection (LSSC) from Northern Infrastructure Products. Can the name on the photo be updated to reflect the name of the transition (Long Span Structure Connection or LSSC). Can the language used to describe the system note that the system has been crash tested to meet the requirements of MASH TL-3. Could it also be noted that the system was designed to provide a crash tested solution where steel beam guide rail can connect to a structure without the use of posts near the rigid structure? The benefit of the system is that 1) It has been crash tested to MASH, unlike any other transition currently under OPS 2) There are no posts installed following the rigid structure which allows underground utilities to be buried deep enough for proper post embedment.</p>	Wording updated

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EM001	MTO	On Section 4.2.1 High Tension Cable Guide Rail, sub-heading Design Guidance, cable tension should have been 25.5 kN at 20 degrees and 37.3 kN at -20 degrees, according to Memo DCSO 2018-08.	Wording updated to reflect as-tested values.
EM002		On page 4.6, Section 4.2, Thrie Beam Systems are missing	Wording updated to reflect all systems described in the manual.